

Contract No. F33657-92-D-2055/0087 CDRL A007, Data Item DI-A-3024A Report No. SID/MR-96/0095

(Unclassified)

PRESENTATION MATERIAL

for

Army Logistics Assessment Program

Prepared for

HQ USA/DALO-RMI 500 Army Pentagon Washington, DC 20310-0500

21 June 1996

Prepared by

Synergy, Inc. 1763 Columbia Rd. NW Washington, DC 20009-2834

Submitted by

SIDAC 5100 Springfield Pike Dayton, Ohio 45431

Approved to purity released

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Form Approved REPORT DOCUMENTATION PAGE OMB No. 0704-0188 Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1213 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget. Paperwork Reduction Project (0704-0188), Washington, DC 20503. REPORT TYPE AND DATES COVERED 2. REPORT DATE AGENCY USE ONLY (Leave blank) 21 June 1996 Presentation Material 5. FUNDING NUMBERS TITLE AND SUBTITLE Contract No. F33657-92-D-2055 Presentation Material for Army Logistics Assessment Program (ALAP) Delivery Order No.0087 6. AUTHOR(S) Mike Austin; Harry Krimkowitz 8. PERFORMING ORGANIZATION REPORT PERFORMING ORGANIZATION NAME(S) AND ADDRESS(S) NUMBER Synergy, Inc. SID 12596 1763 Columbia Rd, NW Washington, DC 20009 SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) 10. SPONSORING/MONITORING AGENCY REPORT NUMBER HQ USA/DALO-RMI SID/MR-96/0095 500 Army Pentagon Washington, DC 20310-0500 11. SUPPLEMENTARY NOTES 12b. DISTRIBUTION CODE 12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for Public Release; Distribution is Unlimited 13. ABSTRACT (Maximum 200 words) The proof-of-concept model for ALAP demonstrates the feasibility of equating Army measures of OPTEMPO, maintenance rates, and funding levels to sustainment capability. Synergy's ALAP shows that we can link weapon system readiness to sustainability given current and future programmed budget positions to create a viable POM and PPBES decision-support tool. This model also supports the hypothesized outcome of current funding levels affecting future capabilities to successfully prosecute combat missions and contingency operations. 14. SUBJECT TERMS 15. NUMBER OF PAGES Logistics, FAMMAS, Sustainment Assessment, OPTEMPO, Funding, Budget 16. PRICE CODE

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17. SECURITY CLASSIFICATION

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TABLE OF CONTENTS

Section	<u>Title</u>	Page
1	INTRODUCTION	1-1
	APPENDIX A: PEACETIME AND WARTIME MODELING	A-1
	APPENDIX B: ARMY LOGISTICS ASSESSMENT PROGRAM UPDATE	B-1
	APPENDIX C: PROPOSAL FOR PROGRAMMED DEPOT	
	MAINTENANCE MODELING	C-1
	APPENDIX D: ARMY LOGISTICS ASSESSMENT PROGRAM UPDATE	D-1
	APPENDIX E: ARMY LOGISTICS ASSESSMENT PROGRAM	
	TECHNICAL BRIEFING	E-1

SECTION 1

INTRODUCTION

The attached presentation materials contain the slide presentations of project reviews conducted for the development of the Army Logistics Assessment Program (ALAP).

APPENDIX A PEACETIME AND WARTIME MODELING



WARTIME MODELING PEACETIME AND

Jim Lutz Ray Reed Sean Trench Mike Austin

JUNE 95

THE ARMY NEEDS THE ABILITY TO PERFORM

PEACETIME AND WARTIME CAPABILITY ASSESSMENTS

BASED ON RESOURCE FUNDING FOR

CURRENT AND IN THE FUTURE (POM YEARS)

BACKGROUND

ARMY Develops Peacetime & Wartime Requirements (Class IX) **Funding Applied During Budgetary Process**

Peacetime:

Funding Has Been Good But The Good Times May Be Short Lived DS/DS Inventories Plus Drawdown Have Reduced Anxieties However, The Army Needs A Predictive Assessment Tool

SEAME/SPA Provide Capability to Assess Current + One Year

Impressed With USAF Predictive Models (FAMMAS & WINLAM) Gen (R) Thurman, On Meyer Readiness Task Force

Provides Capability To Assess MC (NMCM + NMCS) Beginning Production Version (ECD: Sep 95) Successful FAMMAS Prototype Developed

> SEAME/SPA Plus FAMMAS Provides Capability to Assess Current + POM Years

BACKGROUND cont.

Wartime:

OSRAP Is A Good Assessment Tool But Limited To Current + One Year Funding Has Not Been Adequate And The Assessment Capability Limited

If The Balloon Goes Up Today, WRM Will Be Sourced From Peacetime Assets Currently, There Are Enough Assets To Meet The Most Stringent Tasking

However, Will There Be Enough Two or Three Years From Today

And You Lack The Ability To Assess The Impact Of Funding Shortfalls Until The Army Develops A Capability To Show Impact Then OSD/Congress Will Continue To Not Fund WRM If The Current Philosophy Continues, "Do More With Less"

Because Air Force Can Demonstrate Impact (WINLAM) Consequently, The Air Force Wins And Army Looses The DOD Budget Is Usually A Zero Sum Game

The Army Needs The Capability To Assess Current + POM Years

OSRAP Is A Good Assessment Tool:

Determines Total (Class IX) Wartime Requirement (Current + POM) Assess Capability Of Current Stocks + Projected Buys (FY95/96)

No Procedure To Predict An Asset Position Beyond Current Buys No Ability To Assess Impact To Funding Shortfalls However, Can Not Assess POM Requirement (FY97-02)

Need To Expand OSRAP To Assess POM Funding Impacts

PROPOSED SOLUTION

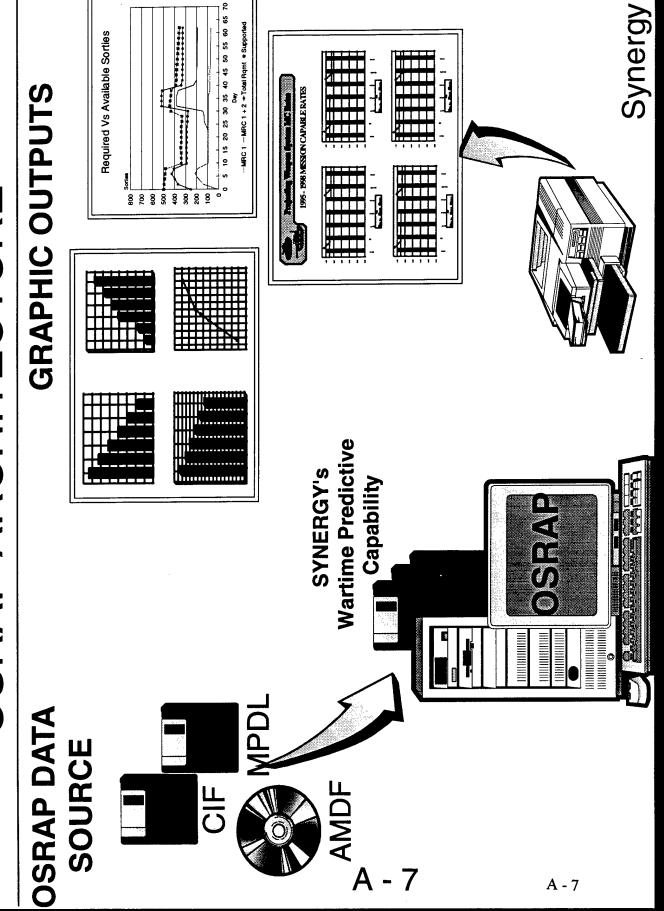
Peacetime Capability Assessment Tool:

Synergy Develop An Army FAMMAS (Predictive Assessment Tool) **AMSAA Modifying OSRAP To Assess Current Asset Position** AMSAA/Synergy Integrate Army FAMMAS Into OSRAP

Wartime Capability Assessment Tool:

Synergy Develop A Wartime Predictive Assessment Capability AMSAA/Synergy Integrate This Capability Into OSRAP Enables OSRAPs Ability To Assess MC (NMCM + NMCS) For Current + POM

OSRAP ARCHITECTURE

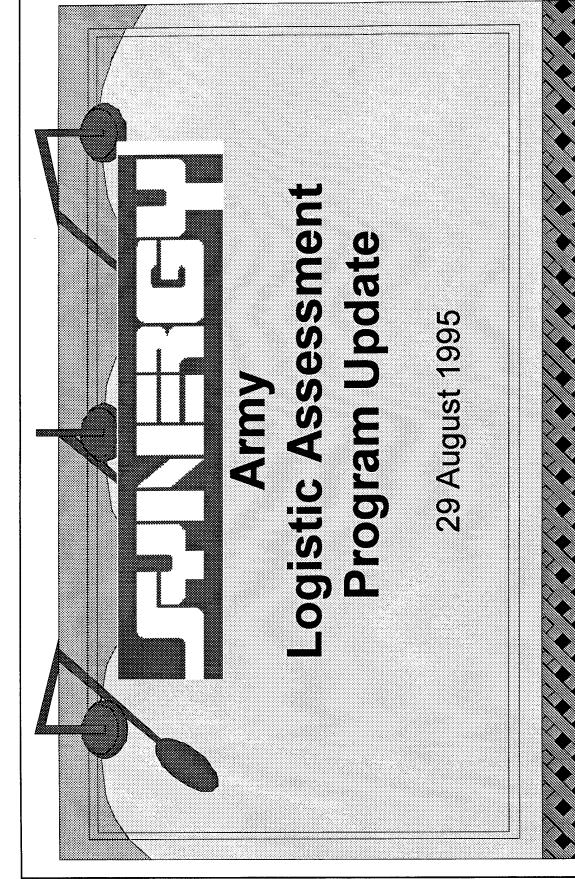


FUTURE ENHANCEMENTS

Make OSRAP An Even Better Tool:

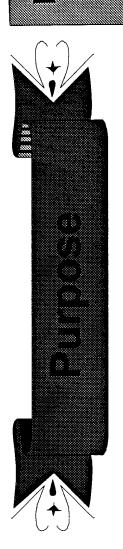
Synergy Asked To Develop Methodology To Assess SE/Mods/Depot AMSAA Desires To Incorporate Other Classes Of Supply In OSRAP Synergy/AMSAA Integrate SE/Mods/Depot To OSRAP

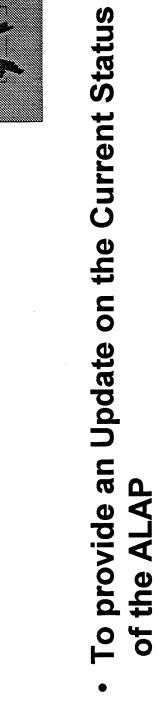
APPENDIX B
ARMY LOGISTICS ASSESSMENT PROGRAM UPDATE



PDR 29Aug. - 1

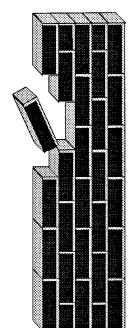






To Obtain a Consensus on the Direction of **Effort for Work Under the ALAP Contract**

Current Work



- Collect Wartime Data
- Address Sustainment/Contingency Issues and Tradeoff Analysis Among the 16 SORTS Weapon Systems
- Investigate Development of Wartime Version of FAMMAS



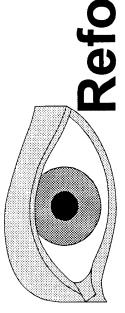
Research

OSRAP

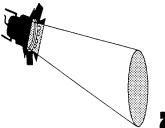
Optimum Stockage Requirements Analysis Program

Similar Input Requirements - Both Predict Weapon System Operational Availability **OSRAP Fulfills AMC Sustainment Analysis Requirements**





Refocus ALAP Effort

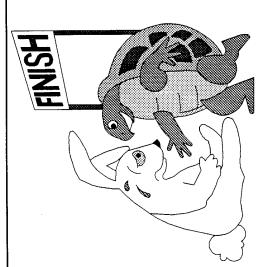


Towards PDM Modeling

- Research
- senss
- Trade-off Capabilities
- O& S Cost
- Architecture Development
- Proof of Concept Model



DR 29Ang - 5



Summary

- Synergy on Contract for work
- Original work planned no longer desired
- Alternative Projects identified and requested
- Synergy ready to refocus work effort
- **Current Contract allows refocusing effort**



DR 29Aug. - 6

Decision

- Work on PDM Modeling
- Continue Work as currently written
- Work with Key Players to ID other areas of interest



APPENDIX C
PROPOSAL FOR PROGRAMMED DEPOT MAINTENANCE MODELING

- Synergy Proposed PDM Modeling for JDMAG
- PDM Modeling for Army suggested
- FAMMAS Statement of Work Modified to include PDM Factor in Weapon System Readiness

C -1

- Modified FAMMAS account for average number of systems in depot
- Missed Opportunity
- PDM modeling should be consistent with JDMAG proposal



Approach to JDMAG Modeling Support of PDM

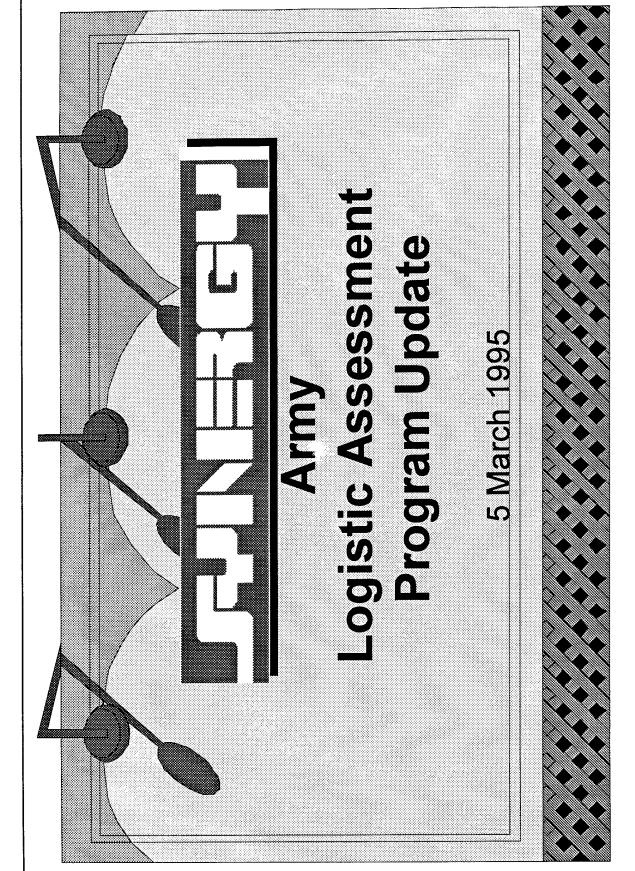
Multi - Phase Effort

Critically review completed phase to analyze justification for continuing

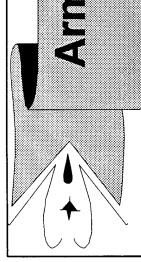
Road Map for Army PDM Modeling

- Identify & Understand the Problem Conduct Research and Analysis to uncover significant statistical indicators
- Relate PDM Budgets to Weapon System Readiness -
- Develop Proof of Concept Model

APPENDIX D
ARMY LOGISTICS ASSESSMENT PROGRAM UPDATE



ALAPIPR 5Mar96 - 1



Army Logistic Assessment



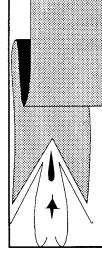


- Purpose
- Background
- Statement of Work
- The ALAP Contract Description

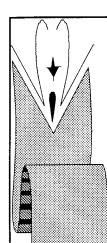
D - 2

- Chronology of Events
- Contract Objective
- Synergy's Approach to Contract Completion
- Status
- Architecture
- Data Source
- Summary



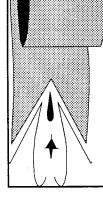


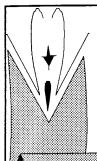
Purpose



- To Present an Historical Overview of Synergy's Army Logistic Assessment Program (ALAP) and efforts to complete the Project
- To Provide an In-Progress Update as of 5 March 1996
- To Preview the Projects Completion







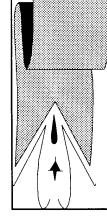
FALL 1993:

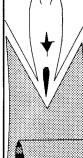
- GEN(R) Thurman, on Meyer Readiness Task Force, Impressed with USAF FAMMAS
- FAMMAS = Funding/Availability Multi-Method Allocator for Spares

DEC 1993:

- DCSLOG GEN. Salomon and DUSD (LOG) Mr. Klugh direct test on AH-64 Apache
- Results were promising







Continued

JAN 9, 1994:

Dr. Perry Memo added Momentum

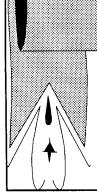
FEB-MAR 1994:

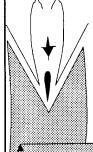
GEN Salomon directed testing on additional 3 Helicopter systems, Results Acceptable

APR 1994:

- DCSLOG GEN. Wilson directed test on M1A1 & **Bradley Fighting Vehicle**
- FAMMAS successfully fitted to ground systems







Continued

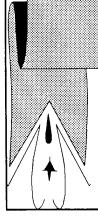
MAY 1994:

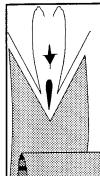
- GEN Wilson directed test on all 16 Major SORTS systems
- Including USMC M1A1 & HMMWV
- Completed initial testing on all 16 Major SORTS systems and results briefed up to Army Vice Chief of Staff level

D - 6

- Synergy and DALO-RMI negotiate two (2) work efforts:
- The first is to put FAMMAS in a Windows environment
- The second is to enhance FAMMAS and conduct Wartime Logistic assessments



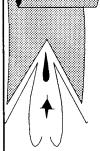




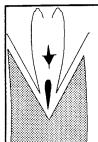
Why ALAP

- Army Logistic Analysis Program (ALAP) reasonable follow on and complement to FAMMAS
- Assesses the sustainability of weapons systems in multiple MRC scenarios
- POM tool to graphically to asses sustainability given a budget position
- Provide total Peace-to-War Funding Scenario





Statements of Work Confusion - One Contract or Two



FAMMAS

Purpose

"...Development of an Army Readiness Model. The model will assess peacetime readiness..."

Work To Be Accomplished

The contractor will design an Army FAMMAS model in a Windows environment. The model will be subject to a Preliminary Design Review (PDR) and a Critical Design Review (CDR). A Critical Design review will be held to finalize changes to the model.

ALAP -

Purpose

"...Development of an Army Readiness Model. The model will assess peacetime readiness..."

Work To Be Accomplished

Perform wartime logistic assessments. The contractor will...install a separate module within FAMMAS which enables the logistics community to assess the impact on system readiness caused by MODs, Depot Maintenance, and common support equipment (CSE)





Statements of Work Confusion - One Contract or Two



FAMMAS -

"...Development of an Army Readiness Model. The model will assess peacetime

<u>Deliverable</u>

- Preliminary Design
- Review (PDR)
- Critical Design Review (CDR) Briefing
- Functional Description
- User's manual
- Software

ALAPIPR SMar96 - 9

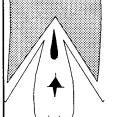
ALAP -

Purpose

"... Development of an Army
Readiness Model. The model
will assess peacetime
readiness..."

Deliverable

- **Technical Report**
- Briefing of Tech Report
- Update Functional Description,
 - Update User's Manual
- FAMMAS Enhancement Software





A Basic Description

- A Multi-Tasked Project
- Enhancements to FAMMAS
- Assess the Development of an Army Version WINLAM (Sustainment Model)
- WINLAM A Decision Tool
- Macro-level Budget Analyses
- budgeting decision impact on Sustainment Capability Quick assessments of programming and





Army Logistics Assessment Program (ALAP)



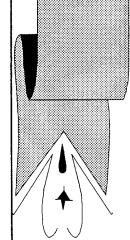
A Chronology of Events

- 16 Jan 95 Contract dated
- Feb 95 Work Begins

D - 11

- Apr 95 First Meeting with Principal Players At LOGSA
- ALAP Briefed as Wartime Version of FAMMAS
- OSRAP "No More Requirement Models" -AMSAA & AMC initial position -



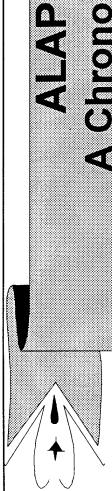


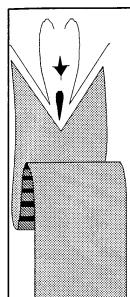
ALAP Vs OSRAP A Chronology





- Apr May 95 Data Research for ALAP Model Development Stops
- May 95 OSRAP Fact finding begins
- OSRAP Stockage Requirement & Determination
- ALAP Wartime Sustainment, MC Predictive & **Budget Decision**
- Similar Input Requirements

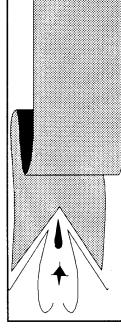




A Chronology

- Jun 95 AMC assumes Project Oversight
- **Briefed Findings of OSRAP** Investigations to AMC
- Model Development on hold until..
- Synergy Turns efforts to FAMMAS Enhancement
- Suggest other Tasks for ALAP Completion
- **Depot Maintenance Program**
- Integration of FAMMAS & OSRAP



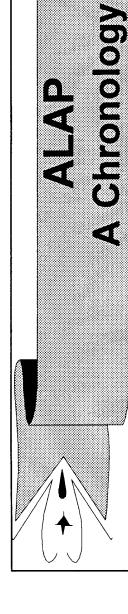


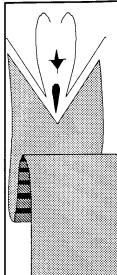
ALAP A Chronology



- Jul 95 Investigation and development of Programmed Depot Maintenance Model favorable to AMC
- Aug 95 DALO-RMI reserves right to make decision on Project Alterations (Depot Maint Model on hold)
- Request OSRAP briefing and demo
- ALAP Model Development continues on hold



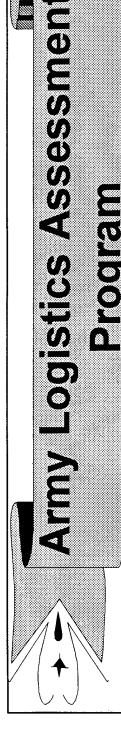


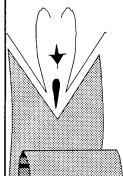


Nov 95 - DALO-RMI gives "go-ahead" for completion of Proof-of-Concept Model

- Jan 96 FAMMAS CDR/PDR
- Personnel Changes within DALO-RMI
- Reversal in thinking vis-a-vis Maintenance Module
- ALAP Vs FAMMAS (Round 2?)

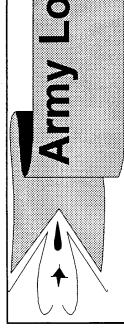


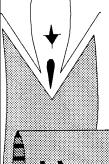




Program A Two Fold Objective

- Enhance FAMMAS by developing and Installing A Maintenance Module
- A Wartime/Sustainment POM and Budget Assessment Investigate Possibility/Feasibility of producing Decision Support Tool

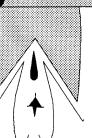




A Two Fold Approach

- Identify key elements to NMCM reporting and replicate using available data Sources **FAMMAS** Maintenance Module -
- Sustainment Proof of Concept Model-
- Research Army Wartime Logistic System
- Research weapon system sustainment efforts
- Identify and develop data sources
- Replicate Logistic Sustainment System



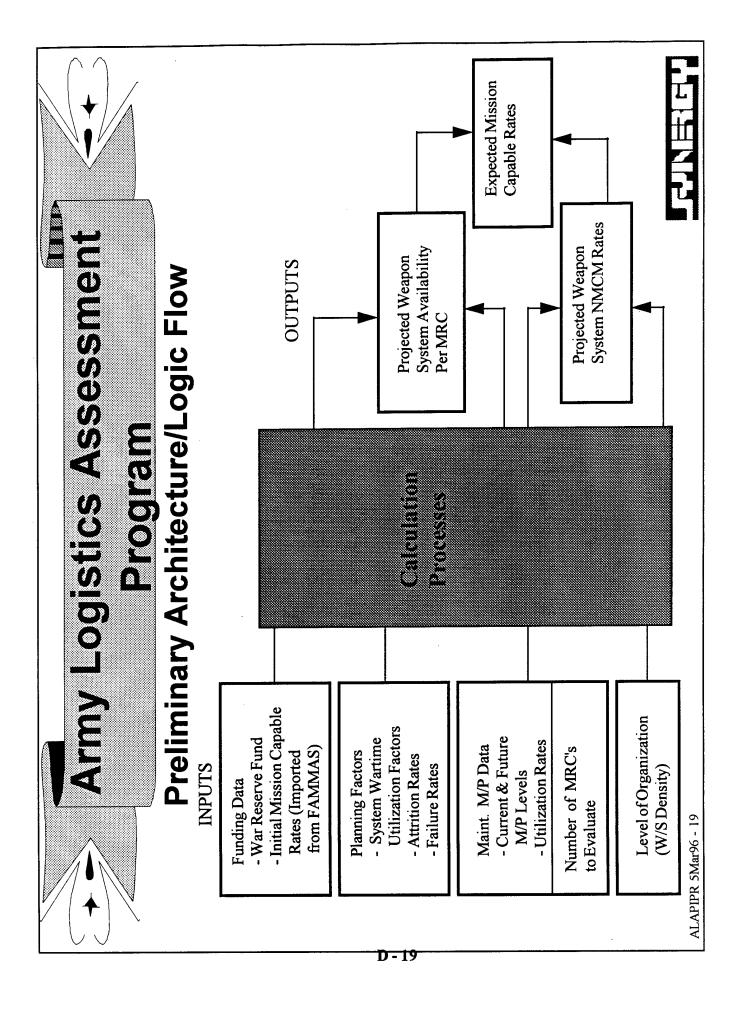


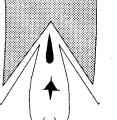


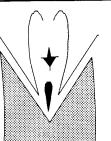
Status of Development

- **FAMMAS** Maintenance Module
- Completed Installed
- Sustainment Model
- Models Architecture in Preliminary Development
- Data Sources identified 90% required data collected
- Algorithms currently being developed







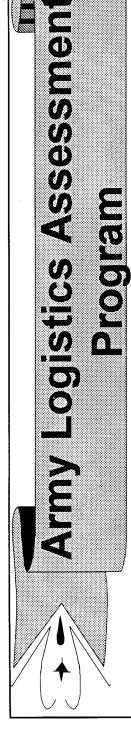


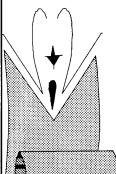
DATA

DATA SOURCE

Army FAMMAS	TRAC-Lee/CASCOM Operations Logistics Planner	Concepts Analysis Agency	Personnel Command MOSLS	LOGSA	Candidate Item File
Initial MC & NMC Rates	Weapon System Density by Force Structure	Combat OPTEMO	Current & Future Manpower Rates	Attrition Rates	Break Rates

ALAPIPR 5Mar96 - 20





SUMMARY

Initial Objective

Perform wartime logistic assessments.

The contractor will...install a separate module within FAMMAS which enables the logistics community to assess the impact on system readiness caused by MODs, Depot Maintenance, and common support equipment (CSE)

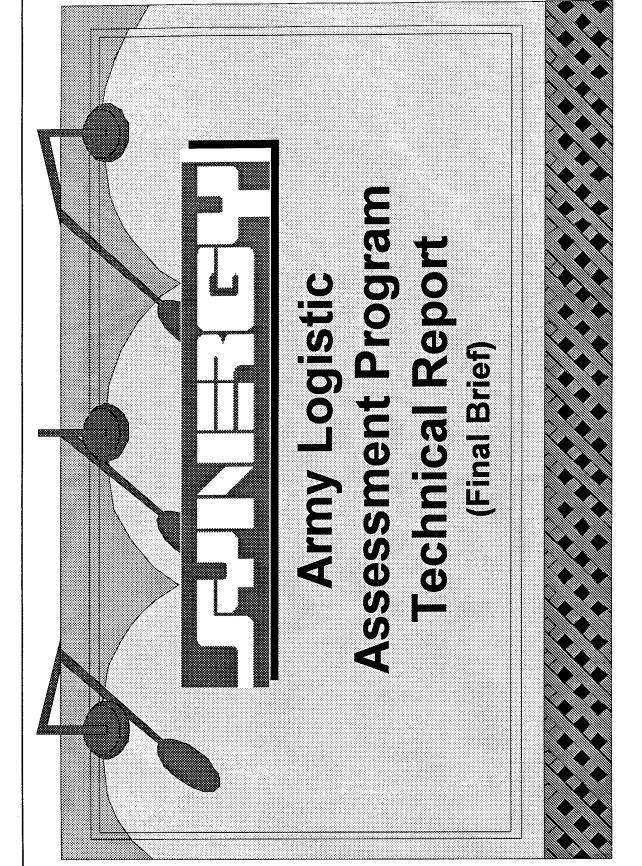
Revised Objective

Because of the many start and stop delays, confusion among all involved regarding Project Coordinator, EAMMAS/ALAP confusion, project goals

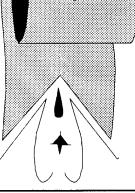
Technical Report and Briefing A Proof of Concept Model



APPENDIX E ARMY LOGISTICS ASSESSMENT PROGRAM TECHNICAL BRIEFING



ALAPTECHRPT - 1

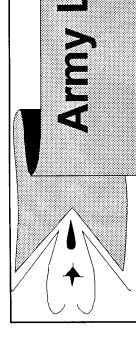




Agenda

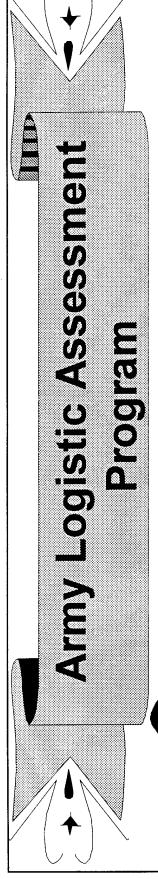
- Purpose
- Background/History
- ALAP The Introduction
- The New Old Project Goal
- The Basic Statement A Building Block
- Original Architecture
- Final Architecture
- The Proof of Concept Model (POCM)
- Improvements
- Summary

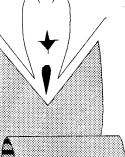






- To Provide Project Close-out Briefing
- To Report Project Analysis
- To Report POCM Prognosis
- To Explain/Demonstrate POCM





Background

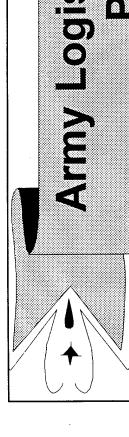


Readiness Task Force, Impressed GEN(R) Thurman, on Meyer with USAF FAMMAS

DEC 1993:

Mr. Klugh direct test on AH-64 Apache - Results DCSLOG GEN. Salomon and DUSD (LOG), were promising







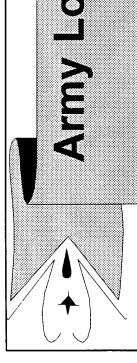


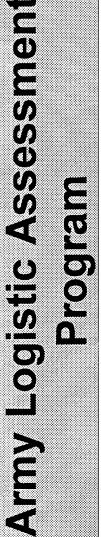
 GEN Salomon directed testing on additional 3 Helicopter systems, Results Acceptable



Bradley Fighting Vehicle - FAMMAS successfully DCSLOG GEN. Wilson directed test on M1A1 & fitted to ground systems









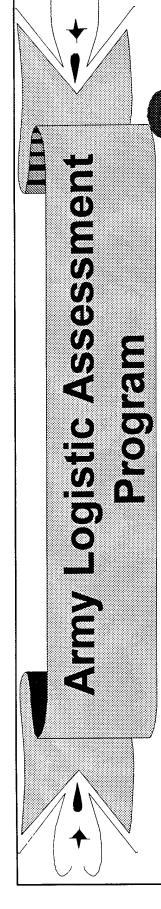
Background



MAY 1994:

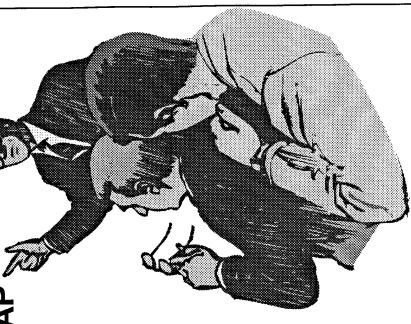
- GEN Wilson directed test on all 16 Major SORTS systems
- Synergy and DALO-RMI negotiate two (2) work efforts





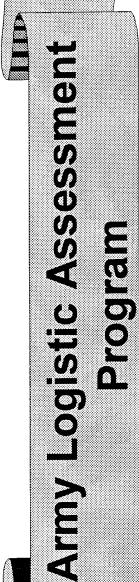


- Wrong Introductory Brief
- Situation Warranted Decision Brief
- Initial Mistake Haunts ALAP to Completion



ALAPTECHRPT - 7





New Decision, Old Goal

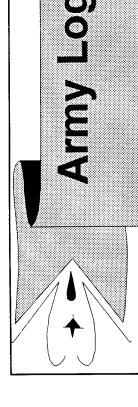
Wartime Model - Sustainment Analysiş Based on Funding Levels & **Budget Posture**

Basic Statement - Model Foundation

Sustainment Linked to OPTEMPO

· Link Army FAMMAS to Wartime

Model









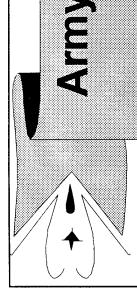


MOSLS Data - Simulate Personnel & Equipment Attrition

Resupply Simulation

ALAPTECHRPT - 9

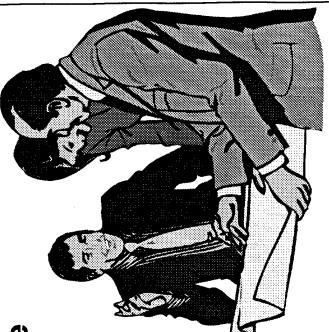




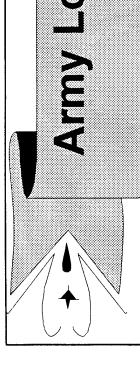


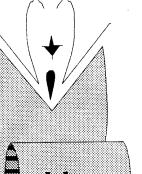
Final Architecture

- Sustainment Analysis Based on Hours of Operation
- Single System Analysis
- 15 Day Scenario
- Randomized Attrition Rate
- Emphasis on Maintenance



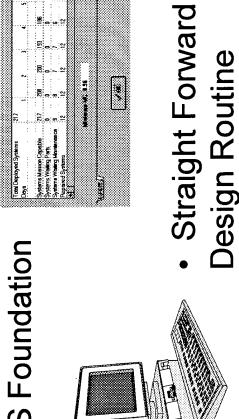
ALAPTECHRPT - 10

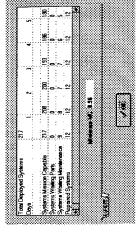




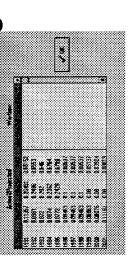
Proof of Concept Model

FAMMAS Foundation Built on Army

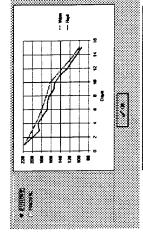


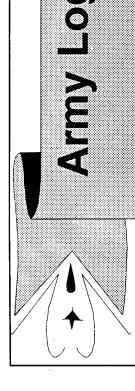


Wartime Availability Based on Current Funding Levels **Gives Weapon System**



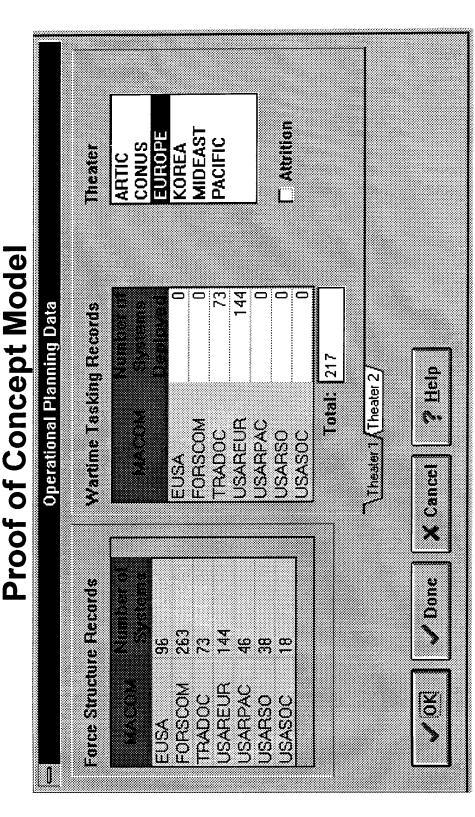
Configured as Output Calculation - Not All Various Useful





Army Logistic Assessment

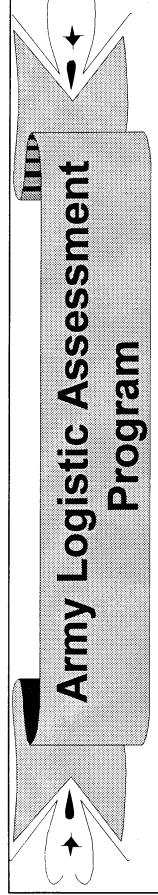
Program

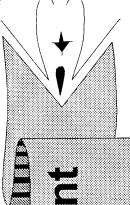


ALAPTECHRPT - 12

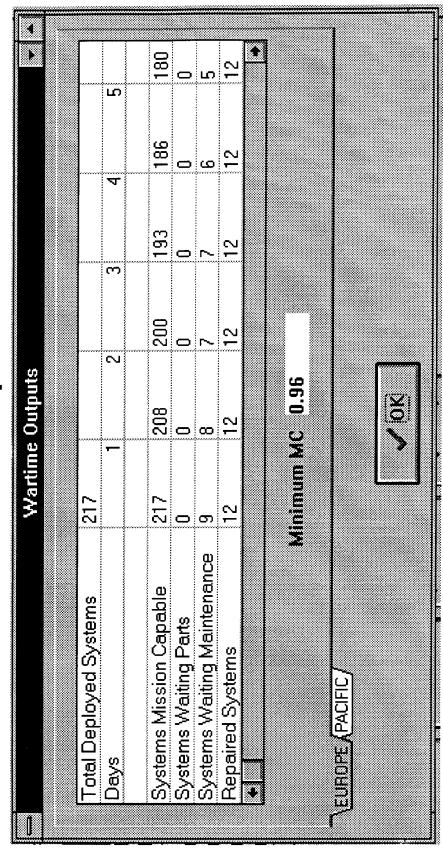
Input Screen





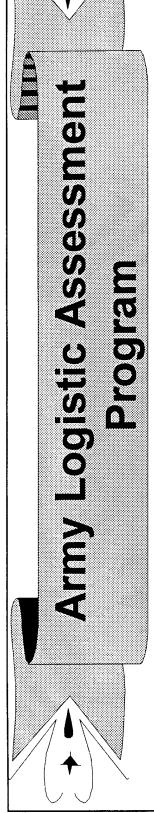


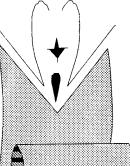
Proof of Concept Mode



ALAPTECHRPT - 13

Analysis/Summary Screen



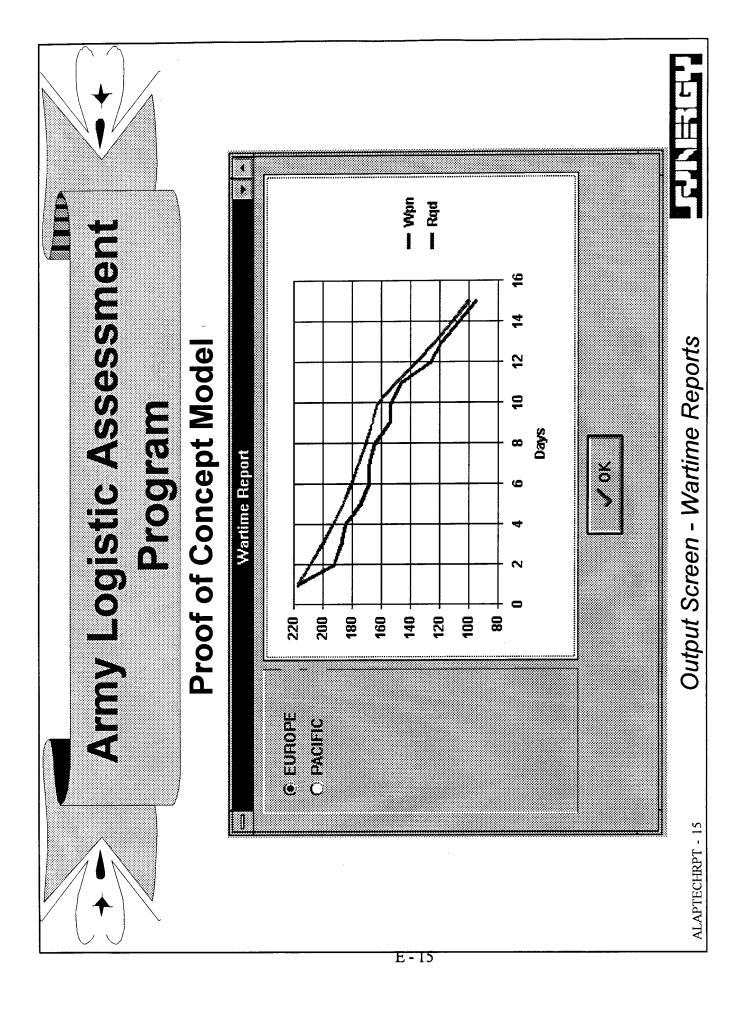


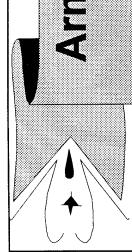
Proof of Concept Model

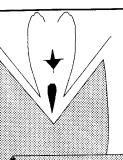
			Peaceti	Peacetime Report	
	ÅC	Actual/Proje	cted		
0000000	0.11357	0.20491	0.68152		
	0.0961	0.2486	0.6553		
	0.072	0.282	0.646		
	0.0874	0.2362	0.6764		
	0.0772	0.2429	0.6799		C. C.
	0.09463	0.1	0.80537		学: >
	0.09463	0.1	0.80537		
	0.09463	0.1	0.80537		
	0.06863	80.0	0.85137		
	0.08076	0.08	0.83924		
	0.11181	n n8	D RNR19		

ALAPTECHRPT - 14

Output Screen - Peacetime Reports

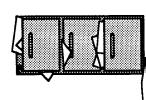






POCM Data Input & Report Output

Input



Mission Profile

Development List (TRADOC)-OPLOGPLN

Candidate Item File

(LOGSA)

Theater WartimeOPTEMPO(CAA) - OPLOGPLN

Systems

Output

MC.

Systems Down for Maintenance

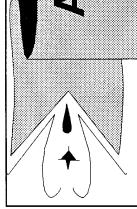
Systems Down for Supply

of Systems Brought Up

Within 24 Hr Period

Min Wartime MC Rate

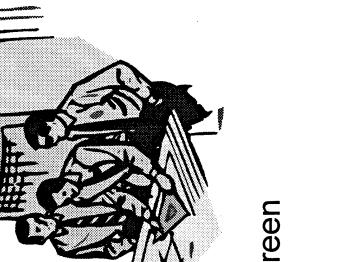


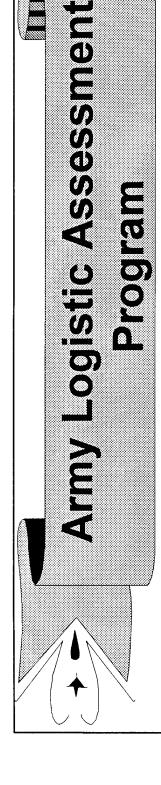




Improvements/Work To Be Done

- Build Combined Arms Analysis Capability
- Add Multiple OPTEMPO Analysis
- Add Resupply Routine
- Add MOSLS Data
- Redesign (with User Input) Analysis Screen
- Integrate With OSRP





Summary



Concept Proved Viable

Functionality Sacrificed Because of False Start

Much Room For Improvement

E-18

Expensive Lesson Learned